WHAT IS CLAIMED IS:

1. An automated brokerage system for processing activity requests related to financial instruments, the system comprising:

a front end layer comprising a plurality of applications configured to generate activity requests related to one or more financial instruments in response to input from remote users;

an intermediate layer in communication with the front end layer, the intermediate layer comprising a plurality of servers for processing the generated activity requests, the servers being configured to provide a set of services in connection with the processing of the activity requests; and

a back end layer in communication with the intermediate layer, the back end layer comprising a data source configured to provide financial instrument quote data, a data repository configured to store customer account data, and an order placement system configured to place one or more orders on a financial instrument trading market, the one or more orders being derived from at least one received activity request; and

wherein the intermediate layer servers are configured to interact with the back end layer data source, the back end layer data repository, and the back end layer order placement system as necessary to process the received activity requests.

2. The system of claim 1 wherein the intermediate layer servers comprise a plurality of dedicated servers, each dedicated server being configured to provide a different set of services in connection with the processing of the activity requests.

3. The system of claim 2 wherein the intermediate layer dedicated servers comprise:

at least one order server configured to receive and process order activity requests from the front end layer;

at least one customer account server configured to receive and process customer account activity requests from the front end layer, wherein the processing of customer account activity requests includes interacting with the back end layer data repository to retrieve customer account data therefrom and providing the retrieved customer account data to the front end applications for display to the users; and

at least one quote server configured to receive and process quote activity requests from the front end layer, wherein the processing of quote activity requests includes interacting with the back end layer data source to retrieve the financial instrument quote data therefrom and providing the retrieved financial instrument quote data to the front layer applications for display to the users.

4.   The system of claim 3 wherein the order server is further configured to interact with the customer account server to obtain customer account data therefrom.

5.   The system of claim 3 wherein the order server is further configured to interact with the quote server to obtain financial instrument quote data therefrom.

6.   The system of claim 3 wherein the intermediate layer further comprises a database schema configured to store data related to received activity requests.

7.   The system of claim 6 wherein the database schema comprises:
    at least one customers database for storing customer-specific data; and
    at least one orders database for storing order-specific data.

8.   The system of claim 7 wherein the database schema further comprises at least one trading administration database for storing administrative restrictions related to activity requests.

9.   The system of claim 8 wherein the database schema further comprises a plurality of the customers databases, a plurality of the orders databases, and a plurality of the trading administration databases.

10.   The system of claim 8 further comprising an administrator interface for controlling the content of the trading administration database.

11.   The system of claim 10 wherein the administrator interface is configured to provide an administrator with control over restrictions on at least one of the group consisting of a financial instrument-

specific basis, a trading market-specific basis, and an option-specific basis.

12. The system of claim 3 wherein the intermediate layer further comprises: a plurality of the order servers; and

a load balancer that interfaces the front end applications with the plurality of order servers, the load balancer being configured to distribute order activity requests among the plurality of order servers.

13. The system of claim 3 wherein the intermediate layer further comprises: a plurality of the customer account servers; and

a load balancer that interfaces the front end applications with the plurality of customer account servers, the load balancer being configured to distribute customer account activity requests among the plurality of customer account servers.

14. The system of claim 3 wherein the intermediate layer further comprises: a plurality of the quote servers; and

a load balancer that interfaces the front front end applications with the plurality of quote servers, the load balancer being configured to distribute quote activity requests among the plurality of quote servers.

15. The system of claim 3 wherein the intermediate layer further comprises: a plurality of the order servers; a plurality of the customer account servers; a plurality of the quote servers;

a first load balancer that interfaces the front end applications with the plurality of order servers, the first load balancer being configured to distribute order activity requests among the plurality of order servers;

a second load balancer that interfaces the front end applications with the plurality of customer account servers, the second load balancer being configured to distribute customer account activity requests among the plurality of customer account servers; and

a third load balancer that interfaces the front end applications with the plurality of quote servers, the third load balancer being configured to distribute quote activity requests among the plurality of quote servers.

16. The system of claim 9 wherein the customer account server includes memory resident thereon for storing customer account data that has previously been retrieved from the back end data repository, and wherein the customer account server is further configured to utilize the customer account data that has been stored in the resident memory according to a predetermined criteria when processing customer account activity requests.

17. The system of claim 16 wherein the resident memory is application-in-memory cache.

18. The system of claim 3 wherein the customer account server includes memory resident thereon for storing customer account data that has previously been retrieved from the back end data repository, and wherein the customer account server is further configured to utilize the customer account data that has been stored in the resident memory according to a predetermined criteria when processing customer account activity requests.

19. The system of claim 16 wherein the resident memory is application-in-memory cache.

20. The system of claim 3 wherein the front end layer and the intermediate layer communicate with each other according to the TCP/IP protocol.

21. The system of claim 20 wherein the intermediate layer servers communicate with each other according to the TCP/IP protocol.

22. The system of claim 3 wherein a plurality of the front end applications are heterogeneous applications configured to communicate with the intermediate layer through a plurality of common COM objects.

23. The system of claim 22 wherein the front end layer COM objects include a COM object for communicating order activity requests to the order server.

24. The system of claim 23 wherein the intermediate layer further comprises at least one trading administration database for storing administrative restrictions related to activity requests, and wherein

the front end layer COM objects further include a COM object for

5   validating an order activity request against restrictions stored in the trading administration database prior to forwarding that order activity request to the order server.

25.   The system of claim 22 wherein the front end layer COM objects further include a COM object for communicating customer account activity requests to the customer account server.

26.   The system of claim 22 wherein the front end layer COM objects further include a COM object for communicating quote activity requests to the quote server.

27.   The system of claim 3 wherein the back end data source comprises at least one quote feed, the at least one quote feed providing quote data in a data format to the quote server, and wherein the quote server is further configured to convert the

5   received quote data to an internal data format upon receipt thereof.

28.   The system of claim 27 wherein the back end data source comprises a plurality of quote feeds, at least two of the quote feeds providing quote data in different data formats, and wherein the quote server is further configured to convert quote data received from each

5   of the quote feeds to the internal data format upon receipt thereof.

29.   The system of claim 28 wherein the quote data comprises a plurality of quote data types, and wherein the system further comprises an administrator interface configured to select, in response to administrator input, which of a plurality of quote feeds

5   are to be used for receiving each of the plurality of quote data types.

30.   The system of claim 3 wherein the back end layer further comprises a plurality of the data repositories, and wherein the intermediate layer servers are configured to interact with both of the back end data repositories when processing activity requests.

31.   The system of claim 3 further comprising an approval desk interface configured to provide a person with control over whether to approve or reject order activity requests routed thereto, and wherein

the order server is further configured to determine whether an
activity request is to be routed to the approval desk.

32. An automated brokerage system, the system comprising:

a plurality of applications configured to generate activity
requests related to one or more financial instruments in response to
input from remote users, the activity requests comprising any of the
group consisting of order activity requests, customer account
activity requests, and quote activity requests;

at least one order server configured to process the order
activity requests;

at least one customer account server configured to process the
customer account activity requests;

at least one quote server configured to process the quote
activity requests;

at least one quote data source in communication with the at
least one quote server, the quote data source being configured to
provide financial instrument quote data to the quote server;

at least one data repository in communication with the at least
one customer account server and the at least one order server, the
data repository being configured to store customer account data and
provide stored customer account data to the customer account server;
and

at least one order placement system in communication with the
order server, the order placement system being configured to place
one or more orders received from the order server on a financial
instrument trading market, the one or more orders being derived from
at least one order activity request.

33. The system of claim 32 further comprising:

a plurality of the order servers;

a plurality of the customer account servers;

a plurality of the quote servers;

a first load balancer connected between the applications and
the order servers, the first load balancer being configured to
distribute order activity requests from the applications among the
order servers;

a second load balancer connected between the applications and
the customer account servers, the second load balancer being
configured to distribute customer account activity requests from the
applications among the customer account servers; and

a third load balancer connected between the applications and the quote servers, the third load balancer being configured to distribute quote activity requests from the applications among the quote servers.

34. The system of claim 32 wherein the order server is further configured to, when processing order activity requests, generate customer account activity requests for communication to the customer account server, and wherein the customer account server is further configured to provide customer account data that has been obtained in response to the customer account activity request received from the order server to the order server.

35. The system of claim 32 wherein the order server is further configured to, when processing order activity requests, generate quote activity requests for communication to the quote server, and wherein the quote server is further configured to provide quote data that has been obtained in response to the quote activity request received from the order server to the order server.

36. In an automated financial instrument brokerage system comprising a backend database for storing customer account data and a server for processing activity requests received from a user, wherein at least some of the activity requests need customer account data for processing, a method comprising:
maintaining a memory that is resident in the server;
storing customer account data retrieved from the backend database in the resident memory; and
determining, according to predetermined usage rules, whether to use the customer account data stored in the resident memory when processing activity requests.

37. The method of claim 36 wherein the resident memory is an application-in-memory cache.

38. The method of claim 37 further comprising:
if the determining step results in a determination to use the customer account data stored in the cache memory when processing an activity request, processing that activity request using the customer account data stored in the cache memory; and

if the determining step results in a determination to not use the customer account data stored in the cache memory when processing an activity request, processing that activity request using the customer account data stored in the backend database.

39. The method of claim 38 wherein the storing step comprises:
storing customer account data in the cache memory for a limited duration after that data has been retrieved from the backend database.

40. The method of claim 38 wherein the activity request is a request by a user to purchase a financial instrument, wherein the purchase is conditional on there being sufficient buying power stored in a customer account associated with the purchase request.

41. The method of claim 38 wherein the activity request is a request by a user to view a balance for a customer's customer account.

42. The method of claim 38 wherein the activity request is a request by a user to sell a financial instrument, wherein the sale is conditional on data in a customer account associated with the sale request.

43. The method of claim 38 wherein the activity request is a request from another server in the system that needs customer account data in order to process an order activity request related to a customer account.

44. The method of claim 38 wherein the predetermined usage rules include a rule that the customer account data stored in the cache memory is not to be used when processing an activity request if that customer account data has been stored in the cache memory for longer than a predetermined length of time.

45. The method of claim 44 wherein the predetermined length of time is approximately five minutes.

46. The method of claim 38 wherein the predetermined usage rules include a rule that the customer account data stored in the cache memory is not to be used when processing an activity request if that

customer account data has already been used a predetermined number of
5   times when processing previous activity requests.

47.   The method of claim 38 wherein the predetermined usage rules
include a rule that customer account data stored in the cache memory
is not to be used when processing an activity request if an account
event has occurred in connection with that customer account since the
5   time that the customer account data was stored in the cache memory.

48.   The method of claim 47 wherein the account event is any from
the group consisting of:
      an order associated with that customer account to purchase or
sell a financial instrument;
5   a modification of an order associated with that customer
account to purchase or sell a financial instrument;
      a cancellation of an order associated with that customer
account to purchase or sell a financial instrument; and
      an execution of an order associated with that customer account
10   to purchase or sell a financial instrument.

49.   A computer-readable medium for determining whether to process
an activity request in an automated financial instrument brokerage
system in accordance with customer account data stored in a memory
resident on a system server or with customer account data stored in a
5   system backend database, the computer-readable medium comprising:
      computer code executable by a processor for determining if a
customer associated with an activity request has customer account
data stored in the resident memory;
      computer code executable by a processor for determining, if the
10   customer associated with the activity request does have customer
account data stored in the resident memory, whether to use the
customer account data stored in the resident memory when processing
the activity request, wherein the usage determination is made in
accordance with a plurality of predetermined usage rules.

50.   The computer-readable medium of claim 49 wherein the resident
memory is an application-in-memory cache.

51.   The computer-readable medium of claim 50 wherein the usage
rules include a rule that the customer account data stored in the
cache memory is not to be used when processing an activity request if

that customer account data has been stored in the cache memory for
5   longer than a predetermined length of time.

52.   The computer-readable medium of claim 50 wherein the
predetermined usage rules include a rule that the customer account
data stored in the cache memory is not to be used when processing an
activity request if that customer account data has already been used
5   a predetermined number of times when processing previous activity
requests.

53.   The computer-readable medium of claim 50 wherein the
predetermined usage rules include a rule that customer account data
stored in the cache memory is not to be used when processing an
activity request if an account event has occurred in connection with
5   that customer account since the time that the customer account data
was stored in the cache memory.

54.   In an automated financial instrument brokerage system
comprising a backend quote data source for obtaining financial
instrument quote data and a server for processing quote activity
requests, a method comprising:
5   maintaining a memory that is resident in the server;
storing quote data retrieved from the backend quote data source
in the resident memory; and
determining, according to predetermined usage rules, whether to
use the quote data stored in the resident memory when processing
10   quote activity requests.

55.   The method of claim 54 wherein the resident memory is an
application-in-memory cache.

56.   The method of claim 55 further comprising:
if the determining step results in a determination to use the
quote data stored in the cache memory when processing a quote
activity request, processing that quote activity request using the
5   quote data stored in the cache memory; and
if the determining step results in a determination to not use
the quote data stored in the cache memory when processing a quote
activity request, processing that quote activity request using quote
data to be obtained from the backend quote data source.

57. The method of claim 56 wherein the storing step comprises:

storing quote data in the cache memory for a limited duration after that data has been obtained from the backend quote data source.

58. The method of claim 56 wherein the quote activity request is a request by a user to view quote data for a particular financial instrument.

59. The method of claim 56 wherein the quote activity request is a request from another server in the system that needs quote data for a financial instrument in order to process an order activity request related to that financial instrument.

60. The method of claim 56 wherein the predetermined usage rules include a rule that the quote data stored in the cache memory is not to be used when processing a quote activity request if that quote data has been stored in the cache memory for longer than a
5   predetermined length of time.

61. A method of scaling an automated financial instrument brokerage system, the system comprising a plurality of applications in communication with a plurality of server groups, the applications being configured to generate activity requests related to one or more
5   financial instruments in response to input from a remote user, the activity requests having a plurality of activity request types, each server group comprising a plurality of servers configured to process a different type of activity request, the method comprising:

providing at least one load balancer to connect the
10   applications with the server groups;

registering each server of the server groups with the at least one load balancer;

directing the generated activity requests from the applications to the at least one load balancer;
15   distributing, from the load balancer, the directed activity requests among the registered servers.

62. The method of claim 61 wherein the providing step comprises providing a different load balancer to connect the applications with each server group, wherein the registering step comprises registering each server of the server groups with the load balancer associated
5   with that server group, and wherein the directing step comprises

directing the generated activity requests from the applications to the load balancers such that each load balancer receives activity request types that are to be processed by the server group associated therewith.

63. The method of claim 62 wherein the activity request types comprise an order activity request, a customer account activity request, and a quote activity request.

64. The method of claim 62 further comprising:
    providing a new redundant server for a server group; and
    registering the new redundant server with the load balancer associated with that server group.

65. A method for switching an automated financial instrument brokerage system from an old customer account database to a new customer account database, the system comprising a first layer for interacting with users to generate activity requests related to one or more financial instruments, a second layer in communication with the first layer for processing activity requests, and a third layer comprising the old database and the new database, both the old and new database being configured to store customer account data relating to equities and options, the method comprising:
    during a first time interval, (1) storing data relating to option trades transacted during the first time interval in the old database, (2) storing data relating to equity trades transacted during the first time interval in the new database, and (3) retrieving customer account data from both the old database and the new database in response to activity requests generated during the first time interval that need customer account data for processing;
    during a second time interval, (1) storing data relating to option trades and equity trades transacted during the second time interval in the new database, and (2) retrieving customer account data from both the old database and the new database in response to activity requests generated during the second time interval that need customer account data for processing; and
    upon expiration of the second time interval, (1) copying the content of the old database into the new database, (2) storing data relating to option trades and equity trades transacted after the expiration of the second time interval in the new database, and (3) retrieving customer account data from the new database in response to

activity requests generated after the expiration of the second time
interval that need customer account data for processing;

30   wherein the overall duration of the first time interval and the
second time interval define a settlement period for equity trades.

66.   The method of claim 65 wherein the settlement period for equity
trades is three days.

67.   The method of claim 66 wherein the first time interval is
approximately two days in length, wherein the second time interval is
approximately one day in length, and wherein the first time interval
commences on the first day of combined use of the old database and

5   the new database.

68.   The method of claim 67 wherein the expiration of the second
time interval occurs on a weekend.

69.   The method of claim 67 wherein the first time interval
commences on a Wednesday.

70.   The method of claim 67 wherein a settlement period for option
trades is one day.

71.   The method of claim 66 wherein a settlement period for option
trades is the duration of the second time interval.

72.   The method of claim 71 wherein the first time interval is
approximately two days in length, wherein the second time interval is
approximately one day in length, and wherein the first time interval
commences on the first day for combined use of the old database and

5   the new database.

73.   The method of claim 72 wherein the expiration of the second
time interval occurs on a weekend.

74.   The method of claim 72 wherein the first time interval
commences on a Wednesday.

75.   The method of claim 66 further comprising, after expiration of
the second time interval, removing the old database from the system.

76.   A method of obtaining quote data from at least one quote vendor
for a financial instrument brokerage system, the system comprising at
least one server configured to utilize quote data when processing an
activity request related to one or more financial instruments, the
method comprising:

        receiving quote data from a quote vendor in a first data
format;

        converting the received quote data to a second data format; and

        providing the second format quote data to the at least one
server for use when processing the activity request.

77.   The method of claim 76 further comprising:

        receiving quote data from a different quote vendor in a third
data format;

        converting the third format quote data to the second data
format; and

        wherein the providing step comprises providing the second
format quote data from either of the two quote vendors to the at
least one server for use when processing the activity request.

78.   The method of claim 76 further comprising:

        detecting a failure in connection with receiving quote data
from the quote vendor;

        selecting a different quote vendor from which to receive quote
data;

        receiving quote data from the different quote vendor in a third
data format;

        converting the third format quote data to the second data
format; and

        providing the second format quote data from the different quote
vendor to the at least one server for use when processing the
activity request.

79.   A method of obtaining quote data from multiple quote vendors
for a financial instrument brokerage system, the system comprising at
least one server configured to utilize quote data when processing an
activity request related to one or more financial instruments, the
method comprising:

        receiving quote data from a plurality of quote vendors, wherein
at least two of the plurality of quote vendors use different data
formats for the quote data;

converting the receiving quote data to a common data format; and

providing the common format quote data to the at least one server for use when processing a customer's activity request.

80. The method of claim 79 wherein the receiving step comprises:

receiving quote data from a first quote vendor in a first quote data format at a given time; and

receiving quote data from a second quote vendor in a second quote data format at a different given time.

81. The method of claim 79 further comprising:

selecting different quote vendors for providing quote data, wherein at least one quote vendor is to provide quote data of a first type and wherein at least one different quote vendor is to provide quote data of a second type.

82. In an automated financial instrument brokerage system configured to process activity requests related to financial instruments, the system comprising a first layer for interacting with users to generate activity requests, a second layer in communication with the first layer, wherein the second layer is configured to process activity requests, a method comprising:

providing, in the first layer, a plurality of heterogeneous applications that are configured to generate activity requests related to financial instruments in response to user input;

providing a common interface for each of the heterogeneous applications to communicate the activity requests to the second layer;

receiving activity requests at the second layer from the common interfaces; and

processing activity requests in the second layer independently of the application from which those activity requests originated.

83. The method of claim 82 wherein the common interface providing step comprises:

providing a component object model (COM) interface for each of the heterogeneous applications to communicate activity requests to the second layer.

84. The method of claim 83 wherein the COM interface includes a COM object for communicating order activity requests to the second layer.

85. The method of claim 83 wherein the COM interface includes a COM object for communicating customer account activity requests to the second layer.

86. The method of claim 83 wherein the COM interface includes a COM object for communicating quote activity requests to the second layer.

87. In an automated financial instrument brokerage system, a method of providing administrative control over financial instrument orders allowed by the system, the method comprising:

    providing a database in which order restrictions are stored;

5   providing an interface configured to allow an administrator to control the restrictions that are stored in the database;

    processing an order activity request generated by an application in response to user input against the restrictions stored in the database to determine whether the order activity request is

10 valid; and

    rejecting the order activity request if it is determined to be invalid.

88. The method of claim 87 wherein the interface is configured to provide the administrator with control of the stored restrictions on a trading symbol-specific basis.

89. The method of claim 87 wherein the interface is configured to provide the administrator with control of the stored restrictions on a trading market-specific basis.

90. The method of claim 87 wherein the interface is configured to provide the administrator with control of the stored restrictions on an option-specific basis.